PERACETIC ACID

CAS Registry Number: 79-21-0 CH_3COOOH

Molecular Formula: $C_2H_4O_3$

Peracetic acid is a colorless liquid with an acrid odor. It is a strong oxidizing agent and is stable in a diluted aqueous solution. Peracetic acid is miscible in water, alcohol, ether, and sulfuric acid (Merck, 1989). It explodes when heated to 110 ^oC and reacts violently with acetic anhydride, 5-p-chlorophenyl-2,2-dimethyl-3-hexanone, ether solvents, metal chloride solutions, olefins, and organic matter. Peracetic acid emits acrid smoke and irritating fumes when it is heated to decomposition (Sax, 1989).

Physical Properties of Peracetic Acid

Synonyms: peroxyacetic acid; acetyl hydroperoxide; ethaneperoxic acid

Molecular Weight:	76.05
Boiling Point:	105 ^oC
Melting Point:	0.1 ^oC
Flash Point:	40.5 ^oC (open cup)
Density/Specific Gravity:	1.15 at 20/4 ^oC (water = 1)
Vapor Pressure:	14.5 mm Hg at 25 ^oC
Log Octanol/Water Partition Coefficient:	-0.924 (est.)
Conversion Factor:	1 ppm = 3.11 mg/m^3

(HSDB, 1993; Sax, 1987)

SOURCES AND EMISSIONS

A. Sources

Peracetic acid (Peroxyacetic acid) is registered as an antimicrobial, disinfectant and bactericide for disinfecting food processing water systems, farm and agricultural structures and equipment, and egg handling areas and equipment. It may be used as a surface disinfectant in hospitals, veterinary hospitals, and food processing plants (DPR, 1996). It is also used as a reagent in making caprolactam and synthetic glycerol, and in bleaching textiles, paper, oil, wax, and starch. It is also used as a polymerization catalyst, an epoxidation of fatty acid esters and epoxy resins precursors, and as a postharvest spray (HSDB, 1993).

The licensing and regulation of pesticides for sale and use in California are the responsibility of

the Department of Pesticide Regulation (DPR). Information presented in this fact sheet regarding the permitted pesticidal uses of peracetic acid has been collected from pesticide labels registered for use in California and from DPR's pesticide databases. This information reflects pesticide use and permitted uses in California as of October 15, 1996. For further information regarding the pesticidal uses of this compound, please contact the Pesticide Registration Branch of DPR (DPR, 1996).

B. Emissions

No emissions of peracetic acid from stationary sources in California were reported, based on data obtained under the Air Toxics "Hot Spots" Program (AB 2588) (ARB, 1997b).

C. Natural Occurrence

Peracetic acid is formed naturally in the atmosphere through a series of photochemical reactions involving formaldehyde and photo-oxidant radicals (HSDB, 1993).

AMBIENT CONCENTRATIONS

No Air Resources Board data exist for ambient measurements of peracetic acid.

INDOOR SOURCES AND CONCENTRATIONS

No information about the indoor sources and concentrations of peracetic acid was found in the readily-available literature.

ATMOSPHERIC PERSISTENCE

Based upon the vapor pressure of peracetic acid, it is expected to exist almost entirely in the gas phase in the atmosphere. The dominant atmospheric loss process for peracetic acid is probably by rain-out (Atkinson, 1995). No information about the atmospheric half-life or lifetime of peracetic acid was found in the readily-available literature.

AB 2588 RISK ASSESSMENT INFORMATION

Peracetic acid emissions are not reported from stationary sources in California under the AB 2588 program. It is also not listed in the California Air Pollution Control Officers Association Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines as having health values (cancer or non-cancer) for use in risk assessments (CAPCOA, 1993).

HEALTH EFFECTS

Probable routes of human exposure to peracetic acid are inhalation, ingestion, and dermal contact.

Non-Cancer: Peracetic acid exposure by ingestion or dermal contact can cause corrosion of the mucous membranes of the mouth, throat, and esophagus. Airborne exposures may result in eye irritation in addition to the above symptoms. Repeated exposures to 186 milligrams per cubic meter peracetic acid aerosol for 90 days have resulted in bronchopneumonia and liver damage in laboratory rodents (HSDB, 1995). There are no existing health-based standards for peracetic acid.

Cancer: The International Agency for Research on Cancer and the United States Environmental Protection Agency have not evaluated peracetic acid carcinogenicity (IARC, 1987a; U.S. EPA, 1995a).